



National  
Library  
of Medicine



Entrez PubMed Nucleotide Protein Genome Structure OMIM PMC Journals Books

Search  for

Limits Preview/Index History Clipboard Details

Show:  Sort   One page.

About Entrez

[Text Version](#)

Entrez PubMed

Overview

[Help | FAQ](#)

Tutorial

New/Noteworthy

E-Utilities

PubMed Services

Journals Database

MeSH Database

Single Citation Matcher

Batch Citation Matcher

Clinical Queries

LinkOut

Cubby

Related Resources

Order Documents

NLM Catalog

NLM Gateway

TOXNET

Consumer Health

Clinical Alerts

ClinicalTrials.gov

PubMed Central

cb

hg e e e fcg

e ch

b e

Items 1 - 85 of 85

**1:** Cho ES, Yu JH, Kim MS, Yim M.  Rolipram, a phosphodiesterase 4 inhibitor, stimulates osteoclast formation by inducing TRANCE expression in mouse calvarial cells. Arch Pharm Res. 2004 Dec;27(12):1258-62. PMID: 15646801 [PubMed - in process]

**2:** Grzegorzewska AE, Mlot M.  Ratio of cyclase activating and cyclase inactive parathormone (CAP/CIP) in dialysis patients: correlations with other markers of bone disease. Roczn Akad Med Bialymst. 2004;49:190-2. PMID: 15631341 [PubMed - in process]

**3:** Skubitz KM, Cheng EY, Clohisy DR, Thompson RC, Skubitz AP.  Gene expression in giant-cell tumors. J Lab Clin Med. 2004 Oct;144(4):193-200. PMID: 15514587 [PubMed - indexed for MEDLINE]

**4:** Wang BL, Qiu MC, Guo G, Liang DC, Zhang JY.  Expression, purification and bioactivity characterization of extracellular domain of murine osteoprotegerin ligand. Yi Chuan Xue Bao. 2004 Jul;31(7):675-81. PMID: 15473318 [PubMed - indexed for MEDLINE]

**5:** Mueller RJ, Richards RG.  Immunohistological identification of receptor activator of NF- $\kappa$ B ligand (RANKL) in human, ovine and bovine bone tissues. J Mater Sci Mater Med. 2004 Apr;15(4):367-72. PMID: 15332601 [PubMed - indexed for MEDLINE]

**6:** Seshasayee D, Wang H, Lee WP, Gribling P, Ross J, Van Bruggen N, Carano R, Grewal IS.  A novel in vivo role for osteoprotegerin ligand in activation of monocyte effector function and inflammatory response. J Biol Chem. 2004 Jul 16;279(29):30202-9. Epub 2004 May 15. PMID: 15145935 [PubMed - indexed for MEDLINE]

**7:** Wagner TU, Renn J, Riemsperger T, Volff JN, Koster RW, Goerlich R, Schartl M, Winkler C.  The teleost fish medaka (*Oryzias latipes*) as genetic model to study gravity dependent bone homeostasis in vivo. Adv Space Res. 2003;32(8):1459-65. PMID: 15000082 [PubMed - in process]

**8:** Sudhoff H, Liebchenz Y, Aschenbrenner J, Euteneuer S, Ebmeyer J, Bernal-Sprekelsen M, Stark T, Dazert S.  [Expression of osteoclast stimulating and differentiating factors in a murine model of localized inflammatory bone resorption] Laryngorhinootologie. 2004 Jan;83(1):14-9. German.

PMID: 14740300 [PubMed - indexed for MEDLINE]

9: [Odgren PR, Philbrick WM, Gartland A.](#) Related Articles, Links  
 Perspective. Osteoclastogenesis and growth plate chondrocyte differentiation: emergence of convergence.  
*Crit Rev Eukaryot Gene Expr.* 2003;13(2-4):181-93. Review.  
 PMID: 14696966 [PubMed - indexed for MEDLINE]

10: [Su X, Liao EY, Peng J, Wu XP.](#) Related Articles, Links  
 [The effects of 17 beta-estradiol on the expression of osteoprotegerin, the ligand of osteoprotegerin and related cytokines in osteosarcoma MG63 cells]  
*Zhonghua Nei Ke Za Zhi.* 2003 Nov;42(11):800-3. Chinese.  
 PMID: 14636471 [PubMed - indexed for MEDLINE]

11: [Cheng X, Kinoshita M, Murali R, Greene ML.](#) Related Articles, Links  
 The TNF receptor superfamily: role in immune inflammation and bone formation.  
*Immunol Res.* 2003;27(2-3):287-94. Review.  
 PMID: 12857975 [PubMed - indexed for MEDLINE]

12: [Walsh MC, Choi Y.](#) Related Articles, Links  
 Biology of the TRANCE axis.  
*Cytokine Growth Factor Rev.* 2003 Jun-Aug;14(3-4):251-63. Review.  
 PMID: 12787563 [PubMed - indexed for MEDLINE]

13: [Wong T, Majchrzak B, Bogoch E, Keystone EC, Fish EN.](#) Related Articles, Links  
 Therapeutic implications for interferon-alpha in arthritis: a pilot study.  
*J Rheumatol.* 2003 May;30(5):934-40.  
 PMID: 12734885 [PubMed - indexed for MEDLINE]

14: [Nakashima T, Wada T, Penninger JM.](#) Related Articles, Links  
 RANKL and RANK as novel therapeutic targets for arthritis.  
*Curr Opin Rheumatol.* 2003 May;15(3):280-7. Review.  
 PMID: 12707582 [PubMed - indexed for MEDLINE]

15: [Kawaiida R, Ohtsuka T, Okutsu J, Takahashi T, Kadono Y, Oda H, Hikita A, Nakamura K, Tanaka S, Furukawa H.](#) Related Articles, Links  
 Jun dimerization protein 2 (JDP2), a member of the AP-1 family of transcription factor, mediates osteoclast differentiation induced by RANKL.  
*J Exp Med.* 2003 Apr 21;197(8):1029-35.  
 PMID: 12707301 [PubMed - indexed for MEDLINE]

16: [Hamzei M, Ventriglia G, Hagnia M, Antonopoulos A, Bernal-Sprekelsen M, Dazert S, Hildmann H, Sudhoff H.](#) Related Articles, Links  
 Osteoclast stimulating and differentiating factors in human cholesteatoma.  
*Laryngoscope.* 2003 Mar;113(3):436-42.  
 PMID: 12616193 [PubMed - indexed for MEDLINE]

17: [Body JJ, Greipp P, Coleman RE, Facon T, Geurs F, Fermand JP, Harousseau JL, Lipton A, Mariette X, Williams CD, Nakanishi A, Holloway D, Martin SW, Dunstan CR, Bekker PJ.](#) Related Articles, Links  
 A phase I study of AMGN-0007, a recombinant osteoprotegerin construct, in patients with multiple myeloma or breast carcinoma related bone metastases.  
*Cancer.* 2003 Feb 1;97(3 Suppl):887-92.  
 PMID: 12548591 [PubMed - indexed for MEDLINE]

18: [Mizuno A, Kanno T, Hoshi M, Shibata O, Yano K, Fujise N, Kinoshita M, Yamaguchi K, Tsuda E, Murakami A, Yasuda H.](#) Related Articles, Links  


**Higashio K.**

Transgenic mice overexpressing soluble osteoclast differentiation factor (sODF) exhibit severe osteoporosis.  
J Bone Miner Metab. 2002;20(6):337-44.  
PMID: 12434161 [PubMed - indexed for MEDLINE]

**19:** Li CL, Toda K, Saibara T, Zhang T, Ono M, Iwasaki S, Maeda T, Okada T, Hayashi Y, Enzan H, Shizuta Y, Onishi S. [Related Articles](#), [Links](#)

Estrogen deficiency results in enhanced expression of Smoothened of the Hedgehog signaling in the thymus and affects thymocyte development.  
Int Immunopharmacol. 2002 May;2(6):823-33.  
PMID: 12095173 [PubMed - indexed for MEDLINE]

**20:** Jiang Y, Mehta CK, Hsu TY, Alsulaimani FF. [Related Articles](#), [Links](#)

Bacteria induce osteoclastogenesis via an osteoblast-independent pathway.  
Infect Immun. 2002 Jun;70(6):3143-8.  
PMID: 12011008 [PubMed - indexed for MEDLINE]

**21:** Coen G, Ballanti P, Balducci A, Calabria S, Fischer MS, Jankovic L, Manni M, Morosetti M, Moscaritolo E, Sardella D, Bonucci E. [Related Articles](#), [Links](#)

Serum osteoprotegerin and renal osteodystrophy.  
Nephrol Dial Transplant. 2002 Feb;17(2):233-8.  
PMID: 11812872 [PubMed - indexed for MEDLINE]

**22:** Odgren PR, Kim N, van Wesenbeeck L, MacKay C, Mason-Savas A, Safadi FF, Popoff SN, Lengner C, van-Hul W, Choi Y, Marks SC Jr. [Related Articles](#), [Links](#)

Evidence that the rat osteopetrotic mutation toothless (tl) is not in the TNFSF11 (TRANCE, RANKL, ODF, OPGL) gene.  
Int J Dev Biol. 2001 Dec;45(8):853-9.  
PMID: 11804028 [PubMed - indexed for MEDLINE]

**23:** Miyamoto N, Higuchi Y, Mori K, Ito M, Tsurudome M, Nishio M, Yamada H, Sudo A, Kato K, Uchida A, Ito Y. [Related Articles](#), [Links](#)

Human osteosarcoma-derived cell lines produce soluble factor(s) that induces differentiation of blood monocytes to osteoclast-like cells.  
Int Immunopharmacol. 2002 Jan;2(1):25-38.  
PMID: 11789667 [PubMed - indexed for MEDLINE]

**24:** Ito S, Wakabayashi K, Ubukata O, Hayashi S, Okada F, Hata T. [Related Articles](#), [Links](#)

Crystal structure of the extracellular domain of mouse RANK ligand at 2.2-A resolution.  
J Biol Chem. 2002 Feb 22;277(8):6631-6. Epub 2001 Nov 30.  
PMID: 11733492 [PubMed - indexed for MEDLINE]

**25:** Dhore CR, Cleutjens JP, Lutgens E, Cleutjens KB, Geusens PP, Kitslaar PJ, Tordoir JH, Spronk HM, Vermeer C, Daemen MJ. [Related Articles](#), [Links](#)

Differential expression of bone matrix regulatory proteins in human atherosclerotic plaques.  
Arterioscler Thromb Vasc Biol. 2001 Dec;21(12):1998-2003.  
PMID: 11742876 [PubMed - indexed for MEDLINE]

**26:** Giuliani N, Bataille R, Mancini C, Lazzaretti M, Barille S. [Related Articles](#), [Links](#)

Myeloma cells induce imbalance in the osteoprotegerin/osteoprotegerin ligand system in the human bone marrow environment.  
Blood. 2001 Dec 15;98(13):3527-33.  
PMID: 11739153 [PubMed - indexed for MEDLINE]

**27:** Kim HJ, Yoon MJ, Lee J, Penninger JM, Kong YY. [Related Articles](#), [Links](#)

**Osteoprotegerin ligand induces beta-casein gene expression through the transcription factor CCAAT/enhancer-binding protein beta.**  
J Biol Chem. 2002 Feb 15;277(7):5339-44. Epub 2001 Nov 28.  
PMID: 11726661 [PubMed - indexed for MEDLINE]

**28:** [Rosa-Ranal M, de la Cruz DA, Lorena-Rubio Y, Larrea F.](#) [Related Articles](#), [Links](#)

**[New paradigms in the regulation of bone metabolism]**  
Rev Invest Clin. 2001 Jul-Aug;53(4):362-9. Spanish.  
PMID: 11599485 [PubMed - indexed for MEDLINE]

**29:** [Lam J, Nelson CA, Ross FP, Teitelbaum SL, Fremont DH.](#) [Related Articles](#), [Links](#)

**Crystal structure of the TRANCE/RANKL cytokine reveals determinants of receptor-ligand specificity.**  
J Clin Invest. 2001 Oct;108(7):971-9.  
PMID: 11581298 [PubMed - indexed for MEDLINE]

**30:** [Kazama JJ, Maruyama H, Gejyo F.](#) [Related Articles](#), [Links](#)

**Osteoclastogenesis and osteoclast activation in dialysis-related amyloid osteopathy.**  
Am J Kidney Dis. 2001 Oct;38(4 Suppl 1):S156-60. Review.  
PMID: 11576944 [PubMed - indexed for MEDLINE]

**31:** [Ikeda T, Utsuyama M, Hirokawa K.](#) [Related Articles](#), [Links](#)

**Expression profiles of receptor activator of nuclear factor kappaB ligand, receptor activator of nuclear factor kappaB, and osteoprotegerin messenger RNA in aged and ovariectomized rat bones.**  
J Bone Miner Res. 2001 Aug;16(8):1416-25.  
PMID: 11499864 [PubMed - indexed for MEDLINE]

**32:** [Corisdeo S, Gyda M, Zaidi M, Moonga BS, Troen BR.](#) [Related Articles](#), [Links](#)

**New insights into the regulation of cathepsin K gene expression by osteoprotegerin ligand.**  
Biochem Biophys Res Commun. 2001 Jul 13;285(2):335-9.  
PMID: 11444847 [PubMed - indexed for MEDLINE]

**33:** [Gyda M, Corisdeo S, Zaidi M, Troen BR.](#) [Related Articles](#), [Links](#)

**Macrophage colony-stimulating factor suppresses osteoblast formation.**  
Biochem Biophys Res Commun. 2001 Jul 13;285(2):328-34.  
PMID: 11444846 [PubMed - indexed for MEDLINE]

**34:** [Kostenuik PJ, Shalhoub V.](#) [Related Articles](#), [Links](#)

**Osteoprotegerin: a physiological and pharmacological inhibitor of bone resorption.**  
Curr Pharm Des. 2001 May;7(8):613-35. Review.  
PMID: 11375772 [PubMed - indexed for MEDLINE]

**35:** [Komine M, Kukita A, Kukita T, Ogata Y, Hotokebuchi T, Kohashi O.](#) [Related Articles](#), [Links](#)

**Tumor necrosis factor-alpha cooperates with receptor activator of nuclear factor kappaB ligand in generation of osteoclasts in stromal cell-depleted rat bone marrow cell culture.**  
Bone. 2001 May;28(5):474-83.  
PMID: 11344046 [PubMed - indexed for MEDLINE]

**36:** [Perez M, Migliaccio S, Taranta A, Festuccia C, Orru L, Brama M, Bologna M, Faraggiana T, Baron R, Teti A.](#) [Related Articles](#), [Links](#)

**Melanoma cells stimulate osteoclastogenesis, c-Src expression and osteoblast cytokines.**

Eur J Cancer. 2001 Mar;37(5):629-40.  
PMID: 11290439 [PubMed - indexed for MEDLINE]

**37:** [Schlondorff J, Lum L, Blobel CP.](#) [Related Articles](#), [Links](#)

Biochemical and pharmacological criteria define two shedding activities for TRANCE/OPGL that are distinct from the tumor necrosis factor alpha convertase. *J Biol Chem.* 2001 May 4;276(18):14665-74. Epub 2001 Jan 30.  
PMID: 11278735 [PubMed - indexed for MEDLINE]

**38:** [Suda T, Kobayashi K, Jimi E, Udagawa N, Takahashi N.](#) [Related Articles](#), [Links](#)

The molecular basis of osteoclast differentiation and activation. *Novartis Found Symp.* 2001;232:235-47; discussion 247-50. Review.  
PMID: 11277084 [PubMed - indexed for MEDLINE]

**39:** [O'Brien EA, Williams JH, Marshall MJ.](#) [Related Articles](#), [Links](#)

Osteoprotegerin is produced when prostaglandin synthesis is inhibited causing osteoclasts to detach from the surface of mouse parietal bone and attach to the endocranial membrane. *Bone.* 2001 Feb;28(2):208-14.  
PMID: 11182380 [PubMed - indexed for MEDLINE]

**40:** [Xing L, Venegas AM, Chen A, Garrett-Beal L, Boyce BF, Varmus HE, Schwartzberg PL.](#) [Related Articles](#), [Links](#)

Genetic evidence for a role for Src family kinases in TNF family receptor signaling and cell survival. *Genes Dev.* 2001 Jan 15;15(2):241-53.  
PMID: 11157779 [PubMed - indexed for MEDLINE]

**41:** [Okahashi N, Murase Y, Koseki T, Sato T, Yamato K, Nishihara T.](#) [Related Articles](#), [Links](#)

Osteoclast differentiation is associated with transient upregulation of cyclin-dependent kinase inhibitors p21(WAF1/CIP1) and p27(KIP1). *J Cell Biochem.* 2001;80(3):339-45.  
PMID: 11135363 [PubMed - indexed for MEDLINE]

**42:** [Srivastava S, Toraldo G, Weitzmann MN, Cenci S, Ross FP, Pacifici R.](#) [Related Articles](#), [Links](#)

Estrogen decreases osteoclast formation by down-regulating receptor activator of NF-kappa B ligand (RANKL)-induced JNK activation. *J Biol Chem.* 2001 Mar 23;276(12):8836-40. Epub 2000 Dec 19.  
PMID: 11121427 [PubMed - indexed for MEDLINE]

**43:** [Shalhoub V, Elliott G, Chiu L, Manoukian R, Kelley M, Hawkins N, Davy E, Shimamoto G, Beck J, Kaufman SA, Van G, Scully S, Qi M, Grisanti M, Dunstan C, Boyle WJ, Lacey DL.](#) [Related Articles](#), [Links](#)

Characterization of osteoclast precursors in human blood. *Br J Haematol.* 2000 Nov;111(2):501-12.  
PMID: 11122091 [PubMed - indexed for MEDLINE]

**44:** [Kong YY, Penninger JM.](#) [Related Articles](#), [Links](#)

Molecular control of bone remodeling and osteoporosis. *Exp Gerontol.* 2000 Oct;35(8):947-56. Review.  
PMID: 11121682 [PubMed - indexed for MEDLINE]

**45:** [Fan X, Fan D, Gewant H, Royce CL, Nanes MS, Rubin J.](#) [Related Articles](#), [Links](#)

Increasing membrane-bound MCSF does not enhance OPGL-driven osteoclastogenesis from marrow cells. *Am J Physiol Endocrinol Metab.* 2001 Jan;280(1):E103-11.  
PMID: 11120664 [PubMed - indexed for MEDLINE]

46: [Mancini L, Moradi-Bidhendi N, Brandi ML, Perretti M, MacIntyre I](#). Related Articles, Links  
 Modulation of the effects of osteoprotegerin (OPG) ligand in a human leukemic cell line by OPG and calcitonin.  
*Biochem Biophys Res Commun.* 2000 Dec 20;279(2):391-7.  
 PMID: 11118297 [PubMed - indexed for MEDLINE]

47: [Xu J, Tan JW, Huang L, Gao XH, Laird R, Liu D, Wysocki S, Zheng MH](#). Related Articles, Links  
 Cloning, sequencing, and functional characterization of the rat homologue of receptor activator of NF-kappaB ligand.  
*J Bone Miner Res.* 2000 Nov;15(11):2178-86.  
 PMID: 11092398 [PubMed - indexed for MEDLINE]

48: [Kinpara K, Mogi M, Kuzushima M, Togari A](#). Related Articles, Links  
 Osteoclast differentiation factor in human osteosarcoma cell line.  
*J Immunoassay.* 2000 Nov;21(4):327-40.  
 PMID: 11071251 [PubMed - indexed for MEDLINE]

49: [Fata JE, Kong YY, Li J, Sasaki T, Irie-Sasaki J, Moorehead RA, Elliott R, Scully S, Voura EB, Lacey DL, Boyle WJ, Khokha R, Penninger JM](#). Related Articles, Links  
 The osteoclast differentiation factor osteoprotegerin-ligand is essential for mammary gland development.  
*Cell.* 2000 Sep 29;103(1):41-50.  
 PMID: 11051546 [PubMed - indexed for MEDLINE]

50: [Fox SW, Fuller K, Bayley KE, Lean JM, Chambers TJ](#). Related Articles, Links  
 TGF-beta 1 and IFN-gamma direct macrophage activation by TNF-alpha to osteoclastic or cytoidal phenotype.  
*J Immunol.* 2000 Nov 1;165(9):4957-63.  
 PMID: 11046022 [PubMed - indexed for MEDLINE]

51: [Takeyama S, Yoshimura Y, Shirai Y, Deyama Y, Hasegawa T, Yawaka Y, Kikuiri T, Matsumoto A, Fukuda H](#). Related Articles, Links  
 Low calcium environment effects osteoprotegerin ligand/osteoclast differentiation factor.  
*Biochem Biophys Res Commun.* 2000 Sep 24;276(2):524-9.  
 PMID: 11027507 [PubMed - indexed for MEDLINE]

52: [Min H, Morony S, Sarosi I, Dunstan CR, Capparelli C, Scully S, Van G, Kaufman S, Kostenuik PJ, Lacey DL, Boyle WJ, Simonet WS](#). Related Articles, Links  
 Osteoprotegerin reverses osteoporosis by inhibiting endosteal osteoclasts and prevents vascular calcification by blocking a process resembling osteoclastogenesis.  
*J Exp Med.* 2000 Aug 21;192(4):463-74.  
 PMID: 10952716 [PubMed - indexed for MEDLINE]

53: [Itonaga I, Fujikawa Y, Sabokbar A, Murray DW, Athanasou NA](#). Related Articles, Links  
 Rheumatoid arthritis synovial macrophage-osteoclast differentiation is osteoprotegerin ligand-dependent.  
*J Pathol.* 2000 Sep;192(1):97-104.  
 PMID: 10951406 [PubMed - indexed for MEDLINE]

54: [Chambers TJ](#). Related Articles, Links  
 Regulation of the differentiation and function of osteoclasts.  
*J Pathol.* 2000 Sep;192(1):4-13. Review.  
 PMID: 10951393 [PubMed - indexed for MEDLINE]

55: Lacey DL, Tan HL, Lu J, Kaufman S, Van G, Qiu W, Rattan A, Scully S, Fletcher F, Juan T, Kelley M, Burgess TL, Boyle WJ, Polverino AJ. [Related Articles](#), [Links](#)  
 Osteoprotegerin ligand modulates murine osteoclast survival in vitro and in vivo.  
*Am J Pathol.* 2000 Aug;157(2):435-48.  
 PMID: 10934148 [PubMed - indexed for MEDLINE]

56: O'Brien EA, Williams JH, Marshall MJ. [Related Articles](#), [Links](#)  
 Osteoprotegerin ligand regulates osteoclast adherence to the bone surface in mouse calvaria.  
*Biochem Biophys Res Commun.* 2000 Aug 2;274(2):281-90.  
 PMID: 10913332 [PubMed - indexed for MEDLINE]

57: Sakaguchi K, Morita I, Murota S. [Related Articles](#), [Links](#)  
 Relationship between the ability to support differentiation of osteoclast-like cells and adipogenesis in murine stromal cells derived from bone marrow.  
*Prostaglandins Leukot Essent Fatty Acids.* 2000 May;62(5):319-27.  
 PMID: 10883064 [PubMed - indexed for MEDLINE]

58: Tsurukai T, Udagawa N, Matsuzaki K, Takahashi N, Suda T. [Related Articles](#), [Links](#)  
 Roles of macrophage-colony stimulating factor and osteoclast differentiation factor in osteoclastogenesis.  
*J Bone Miner Metab.* 2000;18(4):177-84.  
 PMID: 10874596 [PubMed - indexed for MEDLINE]

59: Lean JM, Matsuo K, Fox SW, Fuller K, Gibson FM, Draycott G, Wani MR, Bayley KE, Wong BR, Choi Y, Wagner EF, Chambers TJ. [Related Articles](#), [Links](#)  
 Osteoclast lineage commitment of bone marrow precursors through expression of membrane-bound TRANCE.  
*Bone.* 2000 Jul;27(1):29-40.  
 PMID: 10865206 [PubMed - indexed for MEDLINE]

60: Lubberts E, Joosten LA, Chabaud M, van Den Bersselaar L, Oppers B, Coenen-De Roo CJ, Richards CD, Miossec P, van Den Berg WB. [Related Articles](#), [Links](#)  
 IL-4 gene therapy for collagen arthritis suppresses synovial IL-17 and osteoprotegerin ligand and prevents bone erosion.  
*J Clin Invest.* 2000 Jun;105(12):1697-710.  
 PMID: 10862785 [PubMed - indexed for MEDLINE]

61: Mbalaviele G, Abu-Amer Y, Meng A, Jaiswal R, Beck S, Pittenger MF, Thiede MA, Marshak DR. [Related Articles](#), [Links](#)  
 Activation of peroxisome proliferator-activated receptor-gamma pathway inhibits osteoclast differentiation.  
*J Biol Chem.* 2000 May 12;275(19):14388-93.  
 PMID: 10799521 [PubMed - indexed for MEDLINE]

62: Atkins GJ, Haynes DR, Graves SE, Evdokiou A, Hay S, Bouralexis S, Findlay DM. [Related Articles](#), [Links](#)  
 Expression of osteoclast differentiation signals by stromal elements of giant cell tumors.  
*J Bone Miner Res.* 2000 Apr;15(4):640-9.  
 PMID: 10780856 [PubMed - indexed for MEDLINE]

63: Huang L, Xu J, Wood DJ, Zheng MH. [Related Articles](#), [Links](#)  
 Gene expression of osteoprotegerin ligand, osteoprotegerin, and receptor activator of NF-kappaB in giant cell tumor of bone: possible involvement in

## tumor cell-induced osteoclast-like cell formation.

Am J Pathol. 2000 Mar;156(3):761-7.

PMID: 10702390 [PubMed - indexed for MEDLINE]

**64:** Matsuo K, Owens JM, Tonko M, Elliott C, Chambers TJ, Wagner EF. [Related Articles](#), [Links](#)

Fosl1 is a transcriptional target of c-Fos during osteoclast differentiation. [Nat Genet. 2000 Feb;24\(2\):184-7.](#)  
PMID: 10655067 [PubMed - indexed for MEDLINE]

**65:** Kobayashi K, Takahashi N, Jimi E, Udagawa N, Takami M, Kotake S, Nakagawa N, Kinosaki M, Yamaguchi K, Shima N, Yasuda H, Morinaga T, Higashio K, Martin TJ, Suda T. [Related Articles](#), [Links](#)

Tumor necrosis factor alpha stimulates osteoclast differentiation by a mechanism independent of the ODF/RANKL-RANK interaction. [J Exp Med. 2000 Jan 17;191\(2\):275-86.](#)  
PMID: 10637272 [PubMed - indexed for MEDLINE]

**66:** Itonaga I, Sabokbar A, Murray DW, Athanasou NA. [Related Articles](#), [Links](#)

Effect of osteoprotegerin and osteoprotegerin ligand on osteoclast formation by arthroplasty membrane derived macrophages. [Ann Rheum Dis. 2000 Jan;59\(1\):26-31.](#)  
PMID: 10627423 [PubMed - indexed for MEDLINE]

**67:** Hu S, Tamada K, Ni J, Vincenz C, Chen L. [Related Articles](#), [Links](#)

Characterization of TNFRSF19, a novel member of the tumor necrosis factor receptor superfamily. [Genomics. 1999 Nov 15;62\(1\):103-7.](#)  
PMID: 10585776 [PubMed - indexed for MEDLINE]

**68:** Kong YY, Feige U, Sarosi I, Bolon B, Tafuri A, Morony S, Capparelli C, Li J, Elliott R, McCabe S, Wong T, Campagnuolo G, Moran E, Bogoch ER, Van G, Nguyen LT, Ohashi PS, Lacey DL, Fish E, Boyle WJ, Penninger JM. [Related Articles](#), [Links](#)

Activated T cells regulate bone loss and joint destruction in adjuvant arthritis through osteoprotegerin ligand. [Nature. 1999 Nov 18;402\(6759\):304-9.](#)  
PMID: 10580503 [PubMed - indexed for MEDLINE]

**69:** Udagawa N, Takahashi N, Jimi E, Matsuzaki K, Tsurukai T, Itoh K, Nakagawa N, Yasuda H, Goto M, Tsuda E, Higashio K, Gillespie MT, Martin TJ, Suda T. [Related Articles](#), [Links](#)

Osteoblasts/stromal cells stimulate osteoclast activation through expression of osteoclast differentiation factor/RANKL but not macrophage colony-stimulating factor: receptor activator of NF- $\kappa$ B ligand. [Bone. 1999 Nov;25\(5\):517-23.](#)  
PMID: 10574571 [PubMed - indexed for MEDLINE]

**70:** Greenfield EM, Bi Y, Miyauchi A. [Related Articles](#), [Links](#)

Regulation of osteoclast activity. [Life Sci. 1999;65\(11\):1087-102. Review.](#)  
PMID: 10503925 [PubMed - indexed for MEDLINE]

**71:** Ito H, Akiyama H, Shigeno C, Iyama K, Matsuoka H, Nakamura T. [Related Articles](#), [Links](#)

Hedgehog signaling molecules in bone marrow cells at the initial stage of fracture repair. [Biochem Biophys Res Commun. 1999 Aug 27;262\(2\):443-51.](#)  
PMID: 10462495 [PubMed - indexed for MEDLINE]

**72:** Suda T, Takahashi N, Udagawa N, Jimi E, Gillespie MT, Martin [Related Articles](#), [Links](#)

TJ.

**Modulation of osteoclast differentiation and function by the new members of the tumor necrosis factor receptor and ligand families.**  
Endocr Rev. 1999 Jun;20(3):345-57. Review.  
PMID: 10368775 [PubMed - indexed for MEDLINE]

**73:** Kong YY, Boyle WJ, Penninger JM. Related Articles, Links

**Osteoprotegerin ligand: a common link between osteoclastogenesis, lymph node formation and lymphocyte development.**  
Immunol Cell Biol. 1999 Apr;77(2):188-93. Review.  
PMID: 10234557 [PubMed - indexed for MEDLINE]

**74:** Burgess TL, Qian Y, Kaufman S, Ring BD, Van G, Capparelli C, Kelley M, Hsu H, Boyle WJ, Dunstan CR, Hu S, Lacey DL. Related Articles, Links

**The ligand for osteoprotegerin (OPGL) directly activates mature osteoclasts.**  
J Cell Biol. 1999 May 3;145(3):527-38.  
PMID: 10225954 [PubMed - indexed for MEDLINE]

**75:** Lomaga MA, Yeh WC, Sarosi I, Duncan GS, Furlonger C, Ho A, Morony S, Capparelli C, Van G, Kaufman S, van der Heiden A, Itie A, Wakeham A, Khoo W, Sasaki T, Cao Z, Penninger JM, Paige CJ, Lacey DL, Dunstan CR, Boyle WJ, Goeddel DV, Mak TW. Related Articles, Links

**TRAF6 deficiency results in osteopetrosis and defective interleukin-1, CD40, and LPS signaling.**  
Genes Dev. 1999 Apr 15;13(8):1015-24.  
PMID: 10215628 [PubMed - indexed for MEDLINE]

**76:** Kitazawa R, Kitazawa S, Maeda S. Related Articles, Links

**Promoter structure of mouse RANKL/TRANCE/OPGL/ODF gene.**  
Biochim Biophys Acta. 1999 Apr 14;1445(1):134-41.  
PMID: 10209265 [PubMed - indexed for MEDLINE]

**77:** Akiyama H, Shigeno C, Iyama K, Ito H, Hiraki Y, Konishi J, Nakamura T. Related Articles, Links

**Indian hedgehog in the late-phase differentiation in mouse chondrogenic EC cells, ATDC5: upregulation of type X collagen and osteoprotegerin ligand mRNAs.**  
Biochem Biophys Res Commun. 1999 Apr 21;257(3):814-20.  
PMID: 10208865 [PubMed - indexed for MEDLINE]

**78:** Hsu H, Lacey DL, Dunstan CR, Solovyev I, Colombero A, Timms E, Tan HL, Elliott G, Kelley MJ, Sarosi I, Wang L, Xia XZ, Elliott R, Chiu L, Black T, Scully S, Capparelli C, Morony S, Shimamoto G, Bass MB, Boyle WJ. Related Articles, Links

**Tumor necrosis factor receptor family member RANK mediates osteoclast differentiation and activation induced by osteoprotegerin ligand.**  
Proc Natl Acad Sci U S A. 1999 Mar 30;96(7):3540-5.  
PMID: 10097072 [PubMed - indexed for MEDLINE]

**79:** Takahashi N, Udagawa N, Suda T. Related Articles, Links

**A new member of tumor necrosis factor ligand family, ODF/OPGL/TRANCE/RANKL, regulates osteoclast differentiation and function.**  
Biochem Biophys Res Commun. 1999 Mar 24;256(3):449-55. Review.  
PMID: 10080918 [PubMed - indexed for MEDLINE]

**80:** Faust J, Lacey DL, Hunt P, Burgess TL, Scully S, Van G, Eli A, Qian Y, Shalhoub V. Related Articles, Links

**Osteoclast markers accumulate on cells developing from human peripheral**

blood mononuclear precursors.  
J Cell Biochem. 1999 Jan 1;72(1):67-80.  
PMID: 10025668 [PubMed - indexed for MEDLINE]

81: Shalhoub V, Faust J, Boyle WJ, Dunstan CR, Kelley M, Kaufman S, Scully S, Van G, Lacey DL. Related Articles, Links  
Osteoprotegerin and osteoprotegerin ligand effects on osteoclast formation from human peripheral blood mononuclear cell precursors.  
J Cell Biochem. 1999 Feb 1;72(2):251-61.  
PMID: 10022507 [PubMed - indexed for MEDLINE]

82: Kong YY, Yoshida H, Sarosi I, Tan HL, Timms E, Capparelli C, Morony S, Oliveira-dos-Santos AJ, Van G, Itie A, Khoo W, Wakeham A, Dunstan CR, Lacey DL, Mak TW, Boyle WJ, Penninger JM. Related Articles, Links  
OPGL is a key regulator of osteoclastogenesis, lymphocyte development and lymph-node organogenesis.  
Nature. 1999 Jan 28;397(6717):315-23.  
PMID: 9950424 [PubMed - indexed for MEDLINE]

83: Gao YH, Shinki T, Yuasa T, Kataoka-Enomoto H, Komori T, Suda T, Yamaguchi A. Related Articles, Links  
Potential role of cbfa1, an essential transcriptional factor for osteoblast differentiation, in osteoclastogenesis: regulation of mRNA expression of osteoclast differentiation factor (ODF).  
Biochem Biophys Res Commun. 1998 Nov 27;252(3):697-702.  
PMID: 9837769 [PubMed - indexed for MEDLINE]

84: Vidal ON, Sjogren K, Eriksson BI, Ljunggren O, Ohlsson C. Related Articles, Links  
Osteoprotegerin mRNA is increased by interleukin-1 alpha in the human osteosarcoma cell line MG-63 and in human osteoblast-like cells.  
Biochem Biophys Res Commun. 1998 Jul 30;248(3):696-700.  
PMID: 9703989 [PubMed - indexed for MEDLINE]

85: Lacey DL, Timms E, Tan HL, Kelley MJ, Dunstan CR, Burgess T, Elliott R, Colombero A, Elliott G, Scully S, Hsu H, Sullivan J, Hawkins N, Davy E, Capparelli C, Eli A, Qian YX, Kaufman S, Sarosi I, Shalhoub V, Senaldi G, Guo J, Delaney J, Boyle WJ. Related Articles, Links  
Osteoprotegerin ligand is a cytokine that regulates osteoclast differentiation and activation.  
Cell. 1998 Apr 17;93(2):165-76.  
PMID: 9568710 [PubMed - indexed for MEDLINE]

[Display](#) [Summary](#) Show:  [Text](#)

[Write to the Help Desk](#)

[NCBI](#) | [NLM](#) | [NIH](#)

[Department of Health & Human Services](#)

[Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)



National  
Library  
of Medicine



Entrez PubMed Nucleotide Protein Genomes Structure OMIM PMC Journals Books

Search  for

Show:

About Entrez

[Text Version](#)

[Entrez PubMed](#)

[Overview](#)

[Help | FAQ](#)

[Tutorial](#)

[New/Noteworthy](#)

[E-Utilities](#)

[PubMed Services](#)

[Journals Database](#)

[MeSH Database](#)

[Single Citation Matcher](#)

[Batch Citation Matcher](#)

[Clinical Queries](#)

[LinkOut](#)

[Cubby](#)

[Related Resources](#)

[Order Documents](#)

[NLM Catalog](#)

[NLM Gateway](#)

[TOXNET](#)

[Consumer Health](#)

[Clinical Alerts](#)

[ClinicalTrials.gov](#)

[PubMed Central](#)

1: Prostaglandins Leukot Essent Fatty Acids. 2000 May;62(5):319-27.

[Related Articles](#)

[Links](#)

### Relationship between the ability to support differentiation of osteoclast-like cells and adipogenesis in murine stromal cells derived from bone marrow.

Sakaguchi K, Morita I, Murota S.

Section of Cellular Physiological Chemistry, Graduate School, Tokyo Medical and Dental University, Japan.

In vitro osteoclast differentiation is supported by stromal cells. In order to isolate a stromal cell line that can support osteoclast differentiation, 22 cell lines were cloned from mouse bone marrow. One of these clones, TMS-14, is a line of preadipocytes that supports osteoclast-like cell formation without any bone resorbing factors; and another, TMS-12, is a line of preosteoblasts that supports osteoclast-like cell formation with bone resorbing factors such as prostaglandin E(2)(PGE(2)). The difference of these two lines for osteoclast formation was not related with their abilities of PGE(2) production, but with the expression of osteoclast differentiation factor (ODF, also called OPGL, RANKL, and TRANCE), which detected with RT-PCR, in both cell lines. In TMS-14 cells, ODF mRNA was detected with or without PGE(2). In TMS-12 cells, ODF expression was detected in the PGE(2)-treated cells alone. When TMS-14 cells were induced to undergo adipogenic differentiation in response to treatment with thiazolidinedione, a ligand and activator of peroxisome proliferator-activated receptor gamma (PPAR $\gamma$ ), the ability of TMS-14 cells to support osteoclast-like cell formation was prevented in the presence or absence of 1,25(OH) $_2$ D $_3$ . The gene expression of ODF in TMS-14 cells was also inhibited by treatment with thiazolidinedione. These results suggest that adipogenesis in bone marrow cells is related to the ability to support osteoclast differentiation. This is the first report of a cloned stromal cell line that can support osteoclastogenesis without the treatment with any osteotropic factors. Furthermore, this murine clonal preadipose cell line may be useful for studying senescence-dependent osteoporosis. Copyright 2000 Harcourt Publishers Ltd.

PMID: 10883064 [PubMed - indexed for MEDLINE]

Show:



National  
Library  
of Medicine



Entrez	PubMed	Nucleotide	Protein	Genome	Structure	OMIM	PMC	Journals	Books
Search	PubMed		for				<input type="button" value="Go"/>	<input type="button" value="Clear"/>	
		Limits	Preview/Index		History	Clipboard		Details	
		<input type="radio"/> Display	<input checked="" type="radio"/> Abstract		Show: 20	<input type="radio"/> Sort		<input type="radio"/> Send to	<input type="radio"/> Text

About Entrez

Text Version

1: Int J Dev Biol. 2001 Dec;45(8):853-9.

Related Articles, Links

Entrez PubMed  
Overview  
Help | FAQ  
Tutorial  
New/Noteworthy  
E-Utilities

PubMed Services  
Journals Database  
MeSH Database  
Single Citation Matcher  
Batch Citation Matcher  
Clinical Queries  
LinkOut  
Cubby

Related Resources  
Order Documents  
NLM Catalog  
NLM Gateway  
TOXNET  
Consumer Health  
Clinical Alerts  
ClinicalTrials.gov  
PubMed Central

## Evidence that the rat osteopetrotic mutation toothless (tl) is not in the TNFSF11 (TRANCE, RANKL, ODF, OPGL) gene.

Odgren PR, Kim N, van Wesenbeeck L, MacKay C, Mason-Savas A, Safadi FF, Popoff SN, Lengner C, van-Hul W, Choi Y, Marks SC Jr.

Department of Cell Biology, University of Massachusetts Medical School, Worcester 01655, USA.

The toothless (tl) osteopetrotic mutation in the rat affects an osteoblast-derived factor that is required for normal osteoclast differentiation. Although the genetic locus remains unknown, the phenotypic impact of the tl mutation on multiple systems has been well characterized. Some of its actions are similar to tumornecrosis factor superfamily member 11(TNFSF11; also called TRANCE, RANKL, ODF and OPGL) null mice. TNFSF11 is a recently described member of the tumor necrosis factor superfamily which, when expressed by activated T cells, enhances the survival of antigen-presenting dendritic cells, and when expressed by osteoblasts, promotes the differentiation and activation of osteoclasts. The skeletal similarities between tl rats and TNFSF11(-/-) mice include 1) profound osteoclastopenia (TNFSF11-null mice, 0% and tl rats 0-1% of normal); 2) persistent, non-resolving osteopetrosis that results from 3) a defect not in the osteoclast lineage itself, but in an osteoblast-derived, osteoclastogenic signal; and 4) a severe chondrodysplasia of the growth plates of long bones not seen in other osteopetrotic mutations. The latter includes thickening of the growth plate with age, disorganization of chondrocyte columns, and disturbances of chondrocyte maturation. These striking similarities prompted us to undertake studies to rule in or out a TNFSF11 mutation in the tl rat. We looked for expression of TNFSF11 mRNA in tl long bones and found it to be over-expressed and of the correct size. We also tested TNFSF11 protein function in the tl rat. This was shown to be normal by flow cytometry experiments in which activated, spleen-derived T-cells from tl rats exhibited normal receptor binding competence, as measured by a recombinant receptor assay. We also found that tl rats develop histologically normal mesenteric and peripheral lymph nodes, which are absent from TNFSF11-null mice. Next, we found that injections of recombinant TNFSF11, which restores bone resorption in null mice, had no therapeutic effect in tl rats. Finally, gene mapping studies using co-segregation of polymorphic markers excluded the chromosomal region containing the TNFSF11 gene as harboring the mutation responsible for the tl phenotype. We conclude that, despite substantial phenotypic similarities to TNFSF11(-/-) mice, the tl rat mutation is not in the TNFSF11 locus, and that its identification must await the results of further studies.



National  
Library  
of Medicine



Entrez	PubMed	Nucleotide	Protein	Genome	Structure	OMIM	PMC	Journals	Books
Search <input type="text" value="PubMed"/>				<input type="text" value="for"/>		<input type="button" value="Go"/>	<input type="button" value="Clear"/>		
		Limits	Preview/Index		History	Clipboard		Details	
		<input type="button" value="Display"/>	<input type="button" value="Abstract"/>		Show: <input type="text" value="20"/>	<input type="button" value="Sort"/>		<input type="button" value="Send to"/>	<input type="button" value="Text"/>

About Entrez

Text Version

Entrez PubMed

Overview

Help | FAQ

Tutorial

New/Noteworthy

E-Utilities

PubMed Services

Journals Database

MeSH Database

Single Citation Matcher

Batch Citation Matcher

Clinical Queries

LinkOut

Cubby

Related Resources

Order Documents

NLM Catalog

NLM Gateway

TOXNET

Consumer Health

Clinical Alerts

ClinicalTrials.gov

PubMed Central

1: Immunol Res. 2003;27(2-3):287-94.

Related Articles, Links



## The TNF receptor superfamily: role in immune inflammation and bone formation.

Cheng X, Kinosaki M, Murali R, Greene MI.

Department of Pathology, Abramson Institute for Cancer Research, University of Pennsylvania, Philadelphia, PA 19104-6082, USA.

Tumor necrosis factor (TNF) and TNF receptor (TNFR) family proteins play important roles in many biological processes. Recently, the TNF-family molecule, RANKL (also called TRANCE, ODF, and OPGL), and its receptors, RANK and OPG, were found to be regulators of the development and activation of osteoclasts in bone remodeling. TNFalpha also activates osteoclasts both by themselves and in synergy with RANKL. We used structure-based design to create peptidomimetics and organic therapeutics that inhibit osteoclastogenesis by inhibiting the interaction of ligands and receptors. Here we show for the first time that blocking TNFalpha by these small molecules effectively inhibited osteoclast formation in vitro. These mimetics can be used as a probe to understand the molecular basis of osteoclastogenesis and also as a platform to create useful therapeutic agent.

### Publication Types:

- Review
- Review, Tutorial

PMID: 12857975 [PubMed - indexed for MEDLINE]

<input type="button" value="Display"/>	<input type="button" value="Abstract"/>		Show: <input type="text" value="20"/>	<input type="button" value="Sort"/>		<input type="button" value="Send to"/>	<input type="button" value="Text"/>
--	---	--	---------------------------------------	-------------------------------------	--	--	-------------------------------------

[Write to the Help Desk](#)

[NCBI](#) | [NLM](#) | [NIH](#)

[Department of Health & Human Services](#)

[Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)



National  
Library  
of Medicine



Entrez PubMed Nucleotide Protein Genomes Structure OMIM PMC Journals Books

Search  for

Show:

About Entrez

[Text Version](#)

[Entrez PubMed](#)

[Overview](#)

[Help | FAQ](#)

[Tutorial](#)

[New/Noteworthy](#)

[E-Utilities](#)

[PubMed Services](#)

[Journals Database](#)

[MeSH Database](#)

[Single Citation Matcher](#)

[Batch Citation Matcher](#)

[Clinical Queries](#)

[LinkOut](#)

[Cubby](#)

[Related Resources](#)

[Order Documents](#)

[NLM Catalog](#)

[NLM Gateway](#)

[TOXNET](#)

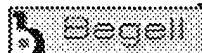
[Consumer Health](#)

[Clinical Alerts](#)

[ClinicalTrials.gov](#)

[PubMed Central](#)

1: Crit Rev Eukaryot Gene Expr. 2003;13(2-4):181-93. [Related Articles, Links](#)



## Perspective. Osteoclastogenesis and growth plate chondrocyte differentiation: emergence of convergence.

Odgren PR, Philbrick WM, Gartland A.

University of Massachusetts Medical School, Department of Cell Biology, Worcester, MA 01655, USA. paul.odgren@umassmed.edu

A "bone" is really a dynamic and highly interactive complex of many cell and tissue types. In particular, for the majority of skeletal elements to develop and grow, the process of endochondral ossification requires a constantly moving interface between cartilage, invading blood vessels, and bone. A great deal has been learned in recent years about the regulation of chondrocyte proliferation and differentiation by hormones, growth factors, and physiologic stimuli during skeletal development and growth. Likewise, the discovery that colony stimulating factor-1 (CSF-1, or M-CSF) and receptor activator of NF- $\kappa$ B ligand (RANKL, a tumor necrosis factor superfamily member also called TRANCE, ODF, OPGL, and TNFSF11) are pivotal in communicating from osteoblasts to osteoclasts has led to deeper insights into bone growth, turnover, and maintenance. Little is known, however, about how these two quite different systems communicate to solve the problem of providing integrated, continuous mechanical support during the dynamic invasion of cartilage by bone that characterizes endochondral bone growth. Evidence has accumulated in recent years that provides insight into the communication between growing bone and cartilage in the form of a subset of osteopetrotic mutations, which share a lack of osteoclasts and an accompanying chondrodysplasia of the growth plate. These mutations thus implicate some of the same gene products in regulating chondrocyte differentiation and bone resorption. We also consider expression studies of some known growth plate regulators, such as parathyroid hormone-related protein (PTHrP) and Indian hedgehog (Ihh), in light of this and propose a model in which the osteoclastogenic factors act also on chondrocytes, but downstream of PTHrP and Ihh in regulating proliferation and differentiation, and after early morphogenic patterns are established.

### Publication Types:

- Review
- Review, Tutorial

PMID: 14696966 [PubMed - indexed for MEDLINE]



National  
Library  
of Medicine



Entrez PubMed Nucleotide Protein Genome Structure OMIM PMC Journals Books

Search  for

Show:

About Entrez

[Text Version](#)

1: Yi Chuan Xue Bao. 2004 Jul;31(7):675-81. [Related Articles](#), [Links](#)

[Entrez PubMed](#)

[Overview](#)

[Help | FAQ](#)

[Tutorial](#)

[New/Noteworthy](#)

[E-Utilities](#)

[PubMed Services](#)

[Journals Database](#)

[MeSH Database](#)

[Single Citation Matcher](#)

[Batch Citation Matcher](#)

[Clinical Queries](#)

[LinkOut](#)

[Cubby](#)

[Related Resources](#)

[Order Documents](#)

[NLM Catalog](#)

[NLM Gateway](#)

[TOXNET](#)

[Consumer Health](#)

[Clinical Alerts](#)

[ClinicalTrials.gov](#)

[PubMed Central](#)

## Expression, purification and bioactivity characterization of extracellular domain of murine osteoprotegerin ligand.

Wang BL, Qiu MC, Guo G, Liang DC, Zhang JY.

Key Laboratory of Hormone and Development of the Public Health Ministry, Tianjin Medical University Hospital, Tianjin Institute of Endocrinology, Tianjin 300052, China. bliwang@163.net

Osteoprotegerin ligand (OPGL) is a key regulator of formation and activation of osteoclasts. In the present study, the cDNA encoding the extracellular domain of murine OPGL (sOPGL) was synthesized by RT-PCR and cloned into fusion expression vector pET-42a(+) in a certain strategy on purpose that the fusion tag could be completely removed by factor Xa from the expressed fusion protein without any vector-encoded sequence left. Induced with IPTG, the recombinant E. Coli cells produced a 47 kD protein in high level that could be recognized, through Western blotting analysis, by the antibody against OPGL. The expressed products were purified through Glutathione-sepharose 4B affinity chromatography. Along with the fusion molecule, a protein about 30 kD was also specifically bound to the resin. The 30 kD molecule could be recognized by polyclonal antibody against GST-IGF-1, but not by antibody against OPGL. It suggested that the 30 kD molecule was derived from the degradation of the fusion protein. After the cleavage with factor Xa and further purification, the fusion tag was removed and the recombinant sOPGL was obtained. Finally, we confirmed that the recombinant sOPGL could promote osteoclast formation from mouse bone marrow cells in a dose dependent manner.

PMID: 15473318 [PubMed - indexed for MEDLINE]

Show:

[Write to the Help Desk](#)

[NCBI | NLM | NIH](#)

[Department of Health & Human Services](#)

[Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)



National  
Library  
of Medicine



Entrez PubMed Nucleotide Protein Genomes Structure OMIM PMC Journals Books

Search  for

Limits

Preview/Index

History

Clipboard

Details

About Entrez

Text Version

1: J Lab Clin Med. 2004 Oct;144(4):193-200.

Related Articles, Links

## Gene expression in giant-cell tumors.

Skubitz KM, Cheng EY, Clohisy DR, Thompson RC, Skubitz AP.

Department of Medicine, University of Minnesota Medical School, Minneapolis, USA. skubi001@umn.edu

Malignant transformation is thought to be associated with changes in the expression of a number of genes, and this alteration in gene expression is considered critical to the development of the malignant phenotype. In this study, gene expression in 8 samples of giant-cell tumor (GCT) of bone, as well as in bone at the site of osteoarthritis and in a variety of normal tissues, was determined at Gene Logic Inc (Gaithersburg, Md) with the use of Affymetrix GeneChip U\_133 arrays containing approximately 40,000 genes/expressed sequence tags (ESTs). Gene-expression analysis was performed with the use of the Gene Logic GeneExpress Software System. Differences in gene expression between GCTs and bone were observed. In addition, genes expressed uniquely in GCTs among these and 519 samples from 20 other tissue types were identified. Some of the genes that were found to be overexpressed in GCTs, such as tartrate-resistant acid phosphatase and the lysosomal H<sup>+</sup>-transporting ATPase, are also expressed by osteoclasts. Osteoprotegerin ligand (OPGL) was also selectively overexpressed in GCTs. The genes found to be overexpressed in GCTs appear to reflect the genetic profile of osteoclast-lineage cells and also the genetic profile of an osteoclastogenic environment. The genes identified in this study may play a role in the pathogenesis of GCTs, confirm the likely importance of OPGL in GCT pathogenesis, and may indicate other possible targets to which antitumor therapy could be directed.

PMID: 15514587 [PubMed - indexed for MEDLINE]

[Write to the Help Desk](#)

NCBI | NLM | NIH

[Department of Health & Human Services](#)

[Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)



National  
Library  
of Medicine



Entrez	PubMed	Nucleotide	Protein	Genomes	Structure	OMIM	PMC	Journals	Books	
Search <input type="text" value="PubMed"/>				<input type="checkbox"/> for <input type="text"/>	<input type="button" value="Go"/>	<input type="button" value="Clear"/>				
		Limits	Preview/Index		History	Clipboard	Details			
		<input type="button" value="Display"/>	<input type="button" value="Abstract"/>	<input type="checkbox"/> Show: <input type="text" value="20"/>	<input type="button" value="Sort"/>	<input type="button" value="Send to"/>	<input type="button" value="Text"/>	<input type="checkbox"/>		

About Entrez

Text Version

1: Rocz Akad Med Bialymst. 2004;49:190-2.

Entrez PubMed  
Overview  
Help | FAQ  
Tutorial  
New/Noteworthy  
E-Utilities

PubMed Services  
Journals Database  
MeSH Database  
Single Citation Matcher  
Batch Citation Matcher  
Clinical Queries  
LinkOut  
Cubby

Related Resources  
Order Documents  
NLM Catalog  
NLM Gateway  
TOXNET  
Consumer Health  
Clinical Alerts  
ClinicalTrials.gov  
PubMed Central

## Ratio of cyclase activating and cyclase inactive parathormone (CAP/CIP) in dialysis patients: correlations with other markers of bone disease.

Grzegorzewska AE, Mlot M.

Chair and Department of Nephrology, Transplantology and Internal Diseases, Karol Marcinkowski University of Medical Sciences, Poznan, Poland.  
alicja\_grzegorzewska@yahoo.com

**PURPOSE:** We checked correlation of CAP/CIP with osteoprotegerin (OPG), its soluble ligand (OPGL) and routinely measured parameters of bone turnover in patients treated with peritoneal dialysis (PD) and hemodialysis (HD). **MATERIAL & METHODS:** In 30 patients (22 HD, 8 PD) we determined serum concentrations of intact parathormone (iPTH), CAP, OPG, OPGL, total Ca, inorganic phosphates (Pi), creatinine, urea, total alkaline phosphatase (AP) and blood pH. CIP was calculated by subtraction of CAP from iPTH. Controls (Cs) included 9 healthy persons in whom iPTH, CAP, OPG and OPGL were measured as well as CIP, CAP/CIP and OPGL/OPG were calculated. **RESULTS:** Differences between HD and PD patients included dialysis duration, OPGL, OPGL/OPG, AP, Pi, Ca and pH. After adjustment to dialysis duration differences in OPGL/OPG, Pi, Ca and pH remained significant. HD patients differed from Cs in terms of iPTH, CAP, CIP, OPGL, OPG and OPGL/OPG. In whole group of patients iPTH, CAP, CIP but not CAP/CIP correlated negatively with OPGL and OPGL/OPG as well as positively with dialysis duration, OPG and AP. **CONCLUSIONS:** Despite more advanced uremic bone disease in longer dialyzed HD patients than in shorter dialyzed PD ones, CAP/CIP is not different neither between these groups nor Cs persons. CAP/CIP does not seem to be more powerful tool in noninvasive diagnosis of bone disease than iPTH or CAP and CIP alone.

PMID: 15631341 [PubMed - in process]

Show:

[Write to the Help Desk](#)

[NCBI](#) | [NLM](#) | [NIH](#)

[Department of Health & Human Services](#)

[Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)



National  
Library  
of Medicine



Entrez PubMed Nucleotide Protein Genomes Structure OMIM PMC Journals Books

Search  for

Show:

About Entrez

[Text Version](#)

1: Arch Pharm Res. 2004 Dec;27(12):1258-62.

[Related Articles](#), [Links](#)

[Entrez PubMed](#)

[Overview](#)

[Help | FAQ](#)

[Tutorial](#)

[New/Noteworthy](#)

[E-Utilities](#)

[PubMed Services](#)

[Journals Database](#)

[MeSH Database](#)

[Single Citation Matcher](#)

[Batch Citation Matcher](#)

[Clinical Queries](#)

[LinkOut](#)

[Cubby](#)

[Related Resources](#)

[Order Documents](#)

[NLM Catalog](#)

[NLM Gateway](#)

[TOXNET](#)

[Consumer Health](#)

[Clinical Alerts](#)

[ClinicalTrials.gov](#)

[PubMed Central](#)

## Rolipram, a phosphodiesterase 4 inhibitor, stimulates osteoclast formation by inducing TRANCE expression in mouse calvarial cells.

Cho ES, Yu JH, Kim MS, Yim M.

College of Pharmacy, Sookmyung Women's University, Seoul 140-742, Korea.

Phosphodiesterase (PDE) 4 is an enzyme that degrades intracellular cAMP. In the present study, the effect of rolipram, a specific phosphodiesterase (PDE) 4 inhibitor, on osteoclast formation was investigated. Rolipram induced osteoclast formation in cocultures of mouse bone marrow cells and calvarial osteoblasts. This activity was not observed in the absence of calvarial osteoblasts, suggesting that calvarial osteoblasts are likely target cells of rolipram. Osteoclast formation by rolipram was completely blocked by the addition of osteoprotegerin (OPG), a soluble decoy receptor for the osteoclast differentiation factor, TNF-related activation-induced cytokine (TRANCE, identical to RANKL, ODF, and OPGL). Northern blot analysis revealed the effect of rolipram to be associated with the increased expression of TRANCE mRNA in mouse calvarial osteoblasts. Collectively, these data indicate that PDE4 inhibitor up-regulates the TRANCE mRNA expression in osteoblasts, which in turn controls osteoclast formation.

PMID: 15646801 [PubMed - in process]

Show:

[Write to the Help Desk](#)

[NCBI](#) | [NLM](#) | [NIH](#)

[Department of Health & Human Services](#)

[Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)